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Klaus Breitschwerdt

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KENYON & KENYON LLP
ONE BROADWAY
NEW YORK, NY 10004

EXAMINER

ARMAND, MARC ANTHONY

ART UNIT

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2814

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/520,218	Applicant(s) BREITSCHWERDT ET AL.	
	Examiner MARC ARMAND	Art Unit 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 22-45 and 51-53 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 22-45, 51-53 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of claims 22-45,51 in the reply filed on 02/26/2009 is acknowledged.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2. **Claims 22-30,39,43,44,51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Geusic et al., (Geusic) USPAT 6,198,168 in view of Wen et al., (Wen) USPAT 6,207,903 and further in view of Tsang et al., (Tsang) US 2003/0072130.**

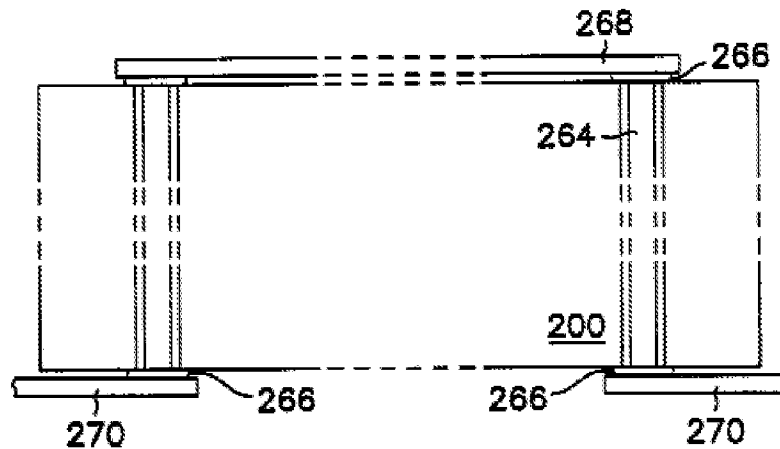


FIG. 8

As per claims 22, Geusic shows in fig. 8 and discloses (col.5, line 60-68) and (col.6, line 1-10) an electrical component, having:

- a first metallization layer (268) (applicant's conductive structure);
- a second conductive structure (270);
- at least one via (264) (applicant's feed through);
- a substrate (applicant's base element) provided with at least one via (268) (applicant's feed through) that connects the first conductive structure (268);
- a base element having at least one feed through (264); a first conductive structure extending on or in a vicinity of an upper side of the base element (200), to the second conductive structure (270), the second conductive structure (270) extending on or in a vicinity of a lower side of the base

element (200) and includes a first conductive structure (268) and a second conductive structure (270).

- Geusic differs from the claimed invention because he does not explicitly disclose an electronic device having an electronic device having a right prism or a right cylinder and a first and second conductive structure includes an upper coplanar waveguide.
- Wen discloses (col.3, line 10-55) and shows fig.1a and 1b an electronic device having a first and second structure (12) that includes an upper coplanar waveguide.
- Wen is evidence that an ordinary skilled in the art would find a reason, suggestion or motivation to modify the device of Geusic it will improve the RF impedance matching at the via transition as taught by Wen in (col.3, line 37-39). Therefore, at the time the invention was made, it would have been obvious to a person having ordinary skill in the art to have device having a first and second structure (12) that includes an upper coplanar waveguide because it will improve the RF impedance matching at the via transition as taught by Wen in (col.3, line 37-39).
- Tsang shows in fig. 6, 3, 4 a semiconductor device having right oval cylindrical waveguides (12) (para 0069, para 0055). Tsang is evidence that ordinary workers skilled in the art would find reasons, suggestions or motivations to modify the device of Geusic. Therefore, at the time the

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invention was made; it would have been obvious to have a semiconductor device having a right cylinder in its device because the cylinders are perfect electric conductors (para 0069) and it also make the stimulation fast and easy to use.

- As for the right oval cylinder, Tsang shows in fig.6, an oval cylinder (12) and also disclose a diameter (para 0044) of that cylinder. Moreover, It would have been an obvious matter of design choice to have an oval cylinder because it is shown in fig.6 and, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. MPEP 2144.04.

As per claim 23, Wen discloses (col.3, line 10-55) an electrical component where the electrical component is one of a high-frequency micromachined (applicant's microelectromechanical component).

Regarding claim 24, Wen discloses (col.3, line 10-55) and shows fig.1a and 1b an electronic device having a first and second structure (12) that includes an upper coplanar waveguide.

As per claim 25, Geusic shows in fig. 8 and discloses (col.5, line 60-68) and (col.6, line 1-10) that the electrical component has at least one via (applicant's feed through) is one of filled and lined with an electrically conductive material corresponding to a metal.

As per claim 26, Geusic shows in fig. 8 and discloses (col.5, line 60-68) and (col.6, line 1-10) that the electrical component has the substrate (200) (applicant's base element) that is flat at least in a vicinity of the at least one via (applicant's feed through), and the at least one feed through extends perpendicularly to a plane spanned by the vicinity of the base element that is flat and penetrates through the substrate (200) (applicant's base element).

As per claim 27, Geusic shows in fig. 8 and discloses (col.5, line 60-68) and (col.6, line 1-10) that the electrical component has at least one via (264) (applicant's feed through) with a conductive material.

As for the process "etching " and "plasma etching" and "filled" do not carry weight in a claim drawn to a structure. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by- process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777F, 2d 659, 698, 227 USPQ 964, 966 (Fed. Cir. 1985); see also MPEP 2113.

As per claim 28 Geusic shows in fig. 8 and discloses (col.5, line 60-68) and (col.6, line 1-10) that the electrical component has at least one via (applicant's feed through) that is rectangular in plan view.

As per claim 31, Geusic discloses (col.3, line 55-60) that the base element has, in a region vias (264), a thickness of 500.mu.m.

As per claim 43, Geusic shows in fig. 8 and discloses (col.5, line 60-68) and (col.6, line 1-10) that the electrical component has an electrical component provided on an upper side of the substrate (200) (applicant's base element) and capable of being electrically activated by way of the at least one via (264) (applicant's feed through) from the lower side of the substrate (200) (applicant's base element)

As per claim 44, Geusic shows in fig. 8 and discloses (col.5, line 60-68) and (col.6, line 1-10) that the electrical component has at least one vias (applicant's feed through). Geusic modify by Wen and Tsang; Wen discloses (col.3, line 10-55) a coplanar waveguide that can be used for high-frequency microelectronic electromagnetic waves (col.3, line 1-10) having a short circuit switch for high-frequency electromagnetic waves.

As per claim 51, Wen discloses (col.3, line 10-55) and shows fig.1a and 1b that an electronic device is sued to create low-loss high-frequency crossovers (col.3, line 1-10).

Regarding claim 39, Wen discloses (col.3, line 10-55) and shows fig.1a and 1b an electronic device having a first and second structure (12) that includes an upper coplanar waveguide having: a first upper ground lead, an upper signal lead, and a second upper ground lead, the first upper ground lead, the upper signal lead, and the second upper ground lead extending at least locally parallel to one another, the second

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conductive structure (14) that includes a lower coplanar waveguide having: a first lower ground lead, a lower signal lead, and a second lower ground lead, the first lower ground lead, the lower signal lead, and the second lower ground lead extending at least locally parallel to one another, the first upper ground lead is connected to the first lower ground lead by way of the first feed through, the second upper ground lead is connected to the second lower ground lead by way of the second feed through, the upper signal lead is connected to the lower signal lead by way of the third feed through, and the third feed through is offset with respect to the first feed through and the second feed through.

3. Claims 32, 33-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Geusic, Wen and Tsang as applied to claims 22-28,31,43,44,51 above and further view of Nakao et al., (Nakao) USPAT 5,926,377.

As per claims 33 and 34, 42 Geusic modify by Wen and Tsang discloses an electronic component having a first and second conductive structure.

Geusic modify by Wen differs from the claimed invention because they do not explicitly disclose a dielectric separating the first and second conductive structure and also that the dielectric includes a pattern and also form an interdigital capacitor.

Nakao shows in fig.18 and discloses (Abstract) a first and second conductive layer (60) and (23) interposed by an insulating material and also that forms a pattern and also a capacitor. Nakao is evidence that one of ordinary skilled in the art would find a reason, suggestion or motivation to have a first and second conductive layer interposed by an insulating material and also that forms a pattern and form a capacitor; and also he discloses (col.10, line 39-41) that it will provide a device that can reduce the

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emission of unwanted waves. Therefore at the time the invention was made, it would have been obvious to a person having ordinary skill in the art to have a first and second conductive layer interposed by an insulating material and also that forms a pattern and a capacitor because it will provide a device that can reduce the emission of unwanted waves as taught by Nakao in (col.1, line 40-44).

As per claims 35, 36, Geusic discloses a device having conductive structures.

Geusic modified by Wen differs from the claimed invention because he does not explicitly disclose a device with capacitance of value within a range of .05pF to 4 pF, and 0.1pF to 2pF.

Nakao (col.5, line 15-20) discloses a device with capacitance of 1000Pf.

Nakao is evidence that ordinary skilled in the art will find reasons; suggestions or motivations to modified the device of Geusic. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have the value of the capacitor within a range of .05pF to 4 pF, and 0.1pF to 2pF since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. MPEP 2144.05.

As per claim 32, Geusic, Wen discloses (col.1, line 30-36) that the electrical component has a base element that includes a high resistivity silicon substrate having a resistance.

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Geusic modified by Wen and Tsang differs from the claimed invention because he does not explicitly disclose the resistance value of the silicon disk of more than 1000 ohms/cm.

Nakao discloses a device of a 10 ohms resistance (col.5, line 30-36).

Nakao is evidence that ordinary skilled in the art will find reasons; suggestions or motivations to modified the device of Geusic. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have the resistance value of the silicon disk of more than 1000 ohms/cm because It would have been obvious to one having ordinary skill in the art at the time of the invention was made to a particular resistance value for the silicon disk, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Also, the substrate (200) of the device of Wen is silicon which is the same material disclosed in the claimed invention

4. Claims 37 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Geusic, Nakao and Tsang as applied to claim 22 as applied to claim 22-28,31,43,44,51 above and further view of Kanber (Kanber) USPAT 5,312,765.

As per claims 37 and 38, Geusic modify by Wen discloses an electronic device having conductors and vias.

Geusic modify by Wen and Tsang differs from the claimed invention because they do not explicitly disclose a dielectric that includes silicon oxide and also that has a thickness of 45nm to 1800 and 90nm to 900nm.

Kanber shows in fig.7 and discloses (col.5, line 35-40) a microelectronic device having a silicon oxide layer as dielectric and also has a thickness of 900-1300 ang.

Kander is evidence that an ordinary skilled in the art would find a reason, suggestion or motivation to modify the device of Geusic because it will help protect the device as taught by kinder in (col.5, line 35-40). Therefore at the time the invention was made, it would have been obvious to a person having ordinary skill in the art to have a silicon oxide layer as dielectric and also with a thickness because it will help protect the device as taught by kinder (col.5, line 35-40).

As for the range of the thickness of the silicon oxide, that is within 45nm to 1800nm and 90nm to 900nm. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have a particular range for the thickness of the silicon oxide, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art.MPEP 2144.05.

5. Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Geusic, Wen and Tsang as applied to claims 22-30, 39,43,44,51 as applied to claim 22 above and further view of Imai (Imai) USPAT 5,901,050.

As per claim 45, Geusic modify by Wen discloses an electronic device having conductors and vias and a base element.

Geusic modify by Wen and Tsang differs from the claimed invention because they do not explicitly disclose an electronic device having a hermetically sealed capsule.

Imai shows in fig.4 and discloses (col.6, line 20-66) a lid (22) (applicant's sealed capsule) sealed on the electronic device.

Imai is evidence that an ordinary skilled in the art would find a reason, suggestion or motivation to modify the device of Geusic because it will help protect the device and facilitate the removal of heat from the circuit, as taught by Imai in (col.6, line 35-38). Therefore at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have a lid covering the device because it will help protect the device and facilitate the removal of heat from the circuit, as taught by Imai in (col.6, line 35-38).

6. Claims 29,30,40,41, are rejected under 35 U.S.C. 103(a) as being unpatentable over Geusic et al., (Geusic) USPAT 6,198,168 in view of Wen et al., (Wen) USPAT 6,207,903 in view of Tsang et al., (Tsang) US 2003/0072130 and further in view of Belousov et al; (Belousov) USPAT 6,328,342.

As per claim 29 and 30, Geusic shows in fig. 8 and discloses (col.5, line 60-68) and (col.6, line 1-10) a via (264) with a width a diameter and also an area.

Geusic differs from the claimed invention because he does not explicitly disclose that at least one feed through occupies in plan view an area of $400 \mu\text{m}^2$ to

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40,000 μm^2 , and the at least one feed through has a diameter of 20 μm to 200 μm , in particular 40 μm to 100 μm . and also, an area of 1,600 μm^2 to 10,000 μm^2 , and the at least one feed through has a diameter of 40 μm to 100 μm .

Belousov discloses (col.3,line 20-23) and (col.3,line 39-43) a device having a feed through that can be filled with metal having an area of 0.001 to 20 μm^2 and a diameter of 20 μm .

It would have been obvious to one having ordinary skill in the art at the time of the invention was made to have at least one feed through occupies in plan view an area of 400 μm^2 to 40,000 μm^2 , and the at least one feed through has a diameter of 20 μm to 200 μm , in particular 40 μm to 100 μm . and also, an area of 1,600 μm^2 to 10,000 μm^2 , and the at least one feed through has a diameter of 40 μm to 100 μm ., since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). MPEP 2144.05

As per claim 40, Wen discloses (col.3, line 10-55) that the electrical component has a plan view where the offset of the third via (13) (applicant's feed through) on the base element has a particular size.

Wen discloses the claimed invention except for a range for the size of the via that is from 50 μm to 300 μm .

Belousov discloses (col.3,line 20-23) and (col.3,line 39-43) an element having a feed through that can be filled with metal having an area of 0.001 to 20 mum and a diameter of 20 mum.

It would have been an obvious matter of design choice to have a particular range for the size of the via, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

As per claim 41, Wen discloses (col.3, line 10-55) that the electrical component has a plan view where the offset of the third via (13) (applicant's feed through) has a particular size.

Belousov discloses (col.3,line 20-23) and (col.3,line 39-43) an element having a feed through that can be filled with metal having an area of 0.001 to 20 mum and a diameter of 20 mum.

Wen discloses the claimed invention except for value for the size of the via that is 150 m.u.m . It would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a particular size for the via, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Response to Arguments

Applicant's arguments with respect to claims 22-45, 51 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARC ARMAND whose telephone number is (571)272-9751. The examiner can normally be reached on 9-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MARC ARMAND/
Examiner, Art Unit 2814

/Wael M Fahmy/
Supervisory Patent Examiner, Art
Unit 2814